CHAPTER 5: SECTION 4(f) AND 6(f) EVALUATION

HIGHWAY RECONSTRUCTION

A formal Section 4(f) and Section 6(f) evaluation was completed for the 1989 Supplemental Environmental Impact Statement (SEIS) (FHWA 1989a). This evaluation constituted the necessary analysis for construction between Olmstead Junction (Olmstead) and Wildwood, as well as preliminary analysis in the Wildwood to Deer Creek State Park Segment and the Deer Creek State Park to Heber Segment. Since the first SEIS was published in 1989, alignment changes have been proposed as part of the 2002 Preferred Alignment in the Wildwood to Deer Creek State Park Segment. In addition, some additional historic properties have become eligible for the National Register of Historic Places (NRHP). This Section 4(f) and 6(f) evaluation for the Wildwood to Deer Creek State Park Segment is based on these changes.

Proposed Action

For a description of the proposed Provo Canyon Highway Improvement Project (Project) and an explanation of the purpose and need for the proposed Project, please refer to Chapter 1, Purpose and Need for Action, and Chapter 2, Alternatives Selection.

Section 4(f) Properties

Section 4(f) of the Department of Transportation Act of 1966

Background

Section 4(f) of the Department of Transportation Act of 1966, as amended (49 U.S. Code 303), provides protection for publicly owned parks and recreation areas, wildlife or waterfowl refuges, and all eligible historic sites regardless of ownership. Section 4(f) requires that impacts to these sites resulting from a proposed project must be avoided if there are feasible and prudent alternative courses of action. If avoidance is not feasible and prudent, then all possible planning to minimize harm to these sites must be included in the project.

Specifically, the pertinent section of the law states:

> C) The Secretary [of Transportation] may approve a transportation program or project (other than any project for a park road or parkway under Section 204 of title 23) requiring the use of publicly owned land of a public park, recreation area, or wildlife and wildfowl refuge, or land of an historic site of national, State, or local

significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if -

(1) there is no prudent and feasible alternative to using that land; and

(2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from such use.

The Federal Highway Administration (FHWA) has adopted regulations (23 Code of Federal Regulations [CFR] 771.135) that provide guidance for implementing Section 4(f). For historic properties, Section 4(f) applies to those eligible for listing on the NRHP, unless the FHWA determines otherwise. National Register of Historic Places sites are also protected by Section 106 of the National Historic Preservation Act. This act requires that Federal agencies consult with the State Historic Preservation Office (SHPO) and Tribal Historic Preservation Offices (THPO),and where necessary, the Advisory Council on Historic Preservation (ACHP) regarding the effects of proposed projects on historic properties. Although consultation with the ACHP for this Project is not required, the ACHP was invited to sign the Memorandum of Agreement (MOA) since it was a signing party on past project MOAs. The analysis for this Project also incorporates the results of the Section 106 consultation process.

Definition of Section 4(f) Use

Impacts to Section 4(f) properties can result from either direct or constructive use. Direct use affects a Section 4(f) property by taking part or all of the property for highway use. When constructive use occurs, a proposed project does not directly incorporate land from a Section 4(f) property. Instead, constructive use occurs when a project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a site for protection under Section 4(f) are substantially impaired.

According to 23 CFR 771.135 (p)(4), constructive use of Section 4(f) properties occurs when any of the following happen:

- Projected noise level increases attributable to the project substantially interfere with the use and enjoyment of a noise-sensitive facility of a resource protected by Section 4(f), such as hearing the performances at an outdoor amphitheater, sleeping in the sleeping area of a campground, enjoyment of a historic site where a quiet setting is a recognizable feature or attribute of the site's significance, or enjoyment of an urban park where serenity and quiet are significant attributes.

- The proximity of the proposed project substantially impairs aesthetic features or attributes of a Section 4(f) resource, where such features or attributes are considered important contributing elements to the value of the resource. Examples would be the location of a proposed transportation facility in such proximity that it obstructs or eliminates the primary views of an architecturally significant historical building, or substantially detracts from the setting of a park or historic site which derives its value in substantial part due to its setting.

- The project results in a restriction on access which substantially diminishes the utility of a significant publicly owned park, recreation area, or historic site.

- The vibration impact from operation of the project substantially impairs the use of a Section 4(f) resource, such as projected vibration levels from a rail transit project that are great enough to affect the structural integrity of a historic building or substantially diminish the utility of the building.

- The ecological intrusion of the project substantially diminishes the value of wildlife habitat in a wildlife or waterfowl refuge adjacent to the project or substantially interferes with the access to such a refuge, when such access is necessary for established wildlife migration or critical life cycle processes.

Recreation Areas in the Project Area

There are two public recreation sites located within the Wildwood to Deer Creek State Park Segment. These include:

- Deer Creek State Park, and

- Uinta National Forest.

Uinta National Forest System Lands within the Project Area are managed for multiple use. The 2002 Preferred Alignment would impact approximately 2.7 hectares (6.7 acres) of National Forest System Land near Horseshoe Bend. However, none of this National Forest System Land is currently designated or listed in future plans as being for significant park, recreation, or wildlife and waterfowl refuge, or any other specific recreational purposes (Forest Service 2002). Therefore, according to 23 CFR 771.135(d), consideration under Section 4(f) does not apply to these lands. As such, the following evaluation provides detailed information only for Deer Creek State Park where direct use would occur.

Historic Properties in the Project Area

Historic properties can be eligible for the NRHP for a variety of reasons. The following four criteria (provided under 36 CFR 60.4) are used to identify eligible sites:

The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

(A) that are associated with events that have made a significant contribution to the broad patterns of our history; or

(B) that are associated with the lives of persons significant in our past; or

(C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(D) that have yielded, or may be likely to yield, information important in prehistory or history.

There are 12 NRHP-eligible properties located in the segment, six of which are located within the Area of Potential Effect (APE) and are therefore considered in this evaluation (Table 5-1). The six sites in the APE are shown on Figure 5-1. The eligible historic properties in the APE qualify under Criteria (A), Criteria (C), or both; and Section 4(f) protection is therefore afforded to these sites as a result of their distinctive architectural qualities or their association with events that have made a significant contribution to history. As noted above, constructive use of Section 4(f) properties only occurs when the proximity impacts associated with a project substantially impair the features or attributes that qualify a site for protection under Section 4(f). Therefore, constructive use of eligible sites in the segment would only occur if there is substantial impairment of a site's historical association, distinctive architectural qualities, or likelihood to yield important information in prehistory.

Direct Use of Historic Properties

Historic Residences (BLDG-4 and BLDG-5): After publication of the first SEIS in 1989 (FHWA 1989a), additional impacts to NRHP-eligible sites were identified. The two eligible historic residences (BLDG-4 and BLDG-5) located near the entrance to Canyon Meadows would have been demolished for implementation of the 1989 SEIS Alignment. Consultation with the Utah SHPO regarding the 2002 Preferred Alignment's effect on historic and archaeological properties within the APE resulted in concurrence that the 2002 Preferred Alignment would not affect these two historic residences (Southworth 1995). Therefore, direct use of these two sites would not occur.

Weeks Bench Archaeological Site (42WA87): The 1989 SEIS Alignment would have impacted the Weeks Bench archaeological site because it would have required that fill be placed over the site for construction of the proposed bridge abutment. This impact was not considered adverse since the site is important primarily from what can be learned through conducting appropriate archaeological research. Since the impact was not adverse, consideration under Section 4(f) did not apply as part

Table 5-1. Eligible Historic Properties Located within the 2002 Preferred Alignment's Area of Potential Effect (APE).

SITE NUMBER AND NAME	SITE TYPE	NRHP[a] CRITERION	SECTION 4(f) USE APPLIES
BLDG-4: Residence	Historic	A and C	No
BLDG-5: Residence	Historic	A and C	No
42WA87: Weeks Bench Archaeological Site	Prehistoric	D	No
42WA42: Campsite	Prehistoric	D	No
DC6: Deer Creek Reservoir Dam Complex	Historic	A and C	Yes (direct use)
42WA114: Heber Valley Historical Railroad	Historic	C	No

[a] National Register of Historic Places.

of the 1989 SEIS Alignment (FHWA 1989a). The 2002 Preferred Alignment would not affect the Weeks Bench archaeological site. Therefore, direct use of this site would not occur.

Prehistoric Campsite (42WA42): Prehistoric Campsite 42WA42 was not identified as an eligible site in the first SEIS and, therefore, potential 1989 SEIS Alignment impacts to this site were not considered under Section 4(f) guidelines. Prehistoric Campsite 42WA42 was recommended ineligible in 1982 (Norman and Merrill 1983), apparently determined ineligible in 1989 (BYUOPA 1989), determined ineligible in 1995 (BYUOPA 1995), and reaffirmed ineligible in the Project's 1995 Determination of Eligibility and Finding of Effect (DOE/FOE) (Southworth 1995). The Utah SHPO concurred with the State of Utah Department of Transportation's (UDOT's) conclusion by signing the 1995 DOE/FOE. Following the 1995 DOE/FOE, UDOT constructed a gravel haul road that bisects Site 42WA42. The 2002 Preferred Alignment would follow the existing haul road alignment. During a September 2000 site visit, UDOT personnel examined Site 42WA42 and discovered what appeared to be cultural deposits in the cut bank of the haul road. In October 2000, the site was tested by Alpine Archeological Consultants, Inc., and its eligibility was re-evaluated. Based on test results, the site was recommended eligible for listing in the NRHP (Reed 2001). The Utah SHPO concurred with its eligibility (Skinner 2000).

Construction of the 2002 Preferred Alignment along the existing haul road would further impact Site 42WA42. However, this prehistoric archaeological property is not of a nature that requires preservation "in place," and the site is important primarily from what can be learned through conducting appropriate archaeological research (e.g., data recovery). Pursuant to 36 CFR 800.6 and 800.14(d), the FHWA and UDOT would follow the guidance provided by the ACHP in their Recommended Approach for Consultation on the Recovery of Significant Information from Archaeological Sites. This would involve consultation with the consulting parties and with the appropriate Native American Tribes, and will most likely result in proposing that mitigation of adverse effects to Site 42WA42 be accomplished through data recovery in the portion of the site in the UDOT right-of-way. A mitigation plan for this will be prepared and submitted to the Utah SHPO/THPO for comment. Data recovery will be completed prior to commencement of

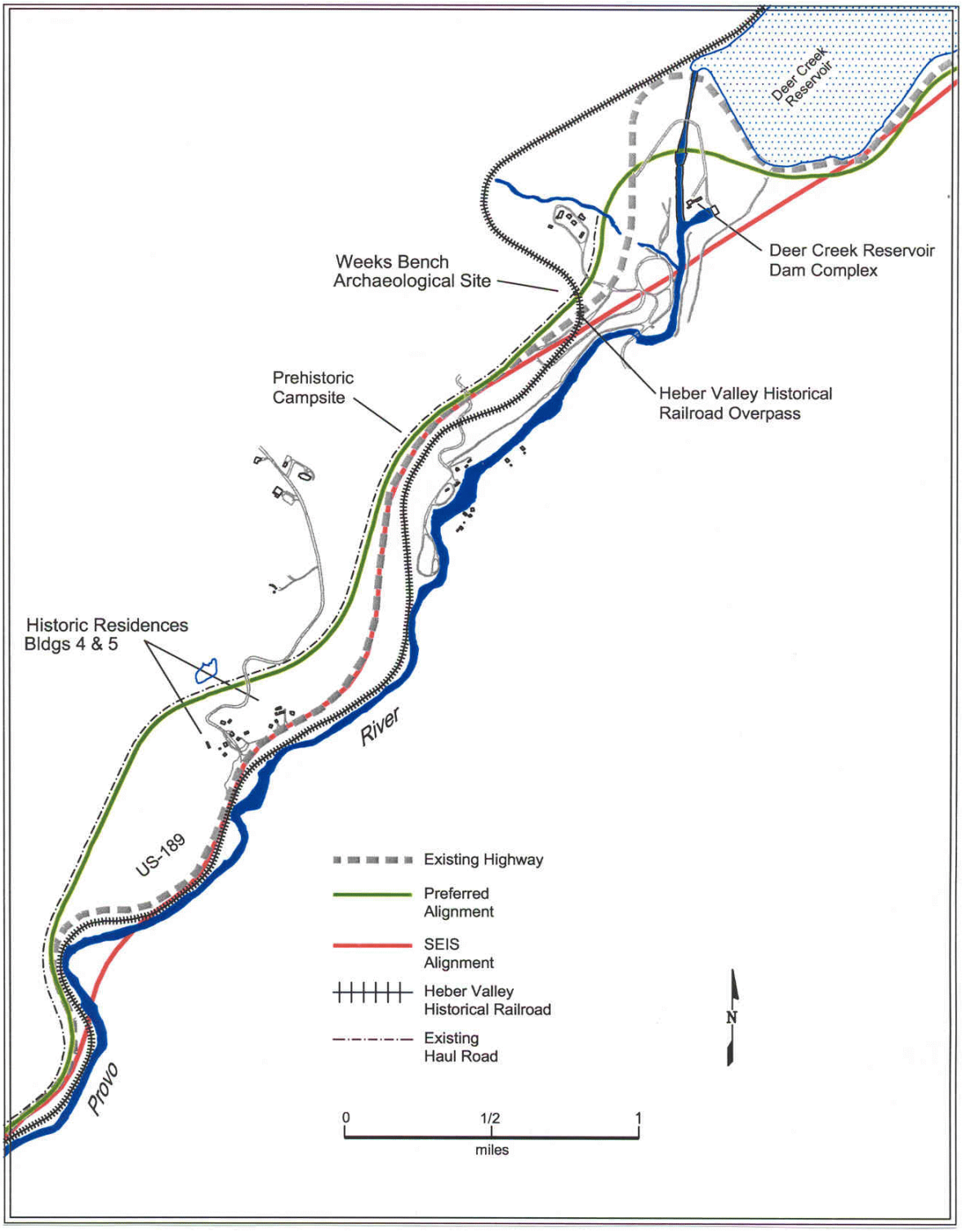

Figure 5-1. Eligible Historic Properties within the 2002 Preferred Alignment's Area of Potential Effect (APE).

construction. Because the site's importance can be ascertained via data recovery and does not require preservation in place, Site 42WA42 does not fall under Section 4(f) guidelines (23 CFR 771.135(g)(2)).

Deer Creek Reservoir Dam Complex (DC6): Direct use of the Deer Creek Reservoir Dam Complex would not occur under the 1989 SEIS Alignment but would occur under the 2002 Preferred Alignment.

Heber Valley Historical Railroad (HVHR) Overpass (42WA114): The 1989 SEIS Alignment would require direct use of the Heber Valley Historical Railroad (HVHR) Overpass. Although the September 2002 Draft of this SEIS disclosed an anticipated impact of the 2002 Preferred Alignment on the overpass, additional engineering analysis has indicated that no impact would occur, and the document has been revised accordingly.

Constructive Use of Historic Properties

Although noise levels would increase at many of the eligible historic properties in the APE, both from increased traffic (whether or not the Project is implemented) and Project-induced traffic, constructive use would not result at any of these sites because the characteristics (e.g., architectural qualities) qualifying these resources for protection under Section 4(f) do not depend upon noise levels. In other words, the eligible historic properties are not noise-sensitive facilities.

Constructive use would not occur at any of the eligible historic sites in the APE as a result of impacts to aesthetic conditions. Although aesthetic conditions at eligible historic properties may be altered by the Project, constructive use would not result at any of these sites because the characteristics (e.g., architectural qualities) that qualify these resources for protection under Section 4(f) would not be substantially impaired. For example, even though the Project includes road segments that would be elevated on fill embankments, these segments would not obstruct or eliminate the primary views (i.e., from the highway or the rail line) of the sites. Chapter 4 describes potential impacts to aesthetic and visual conditions.

Constructive use would not occur at any Section 4(f) sites as a result of restricted access or operational vibration impacts. Specifically, vibration would not substantially impair any Section 4(f) sites through impacts to structural integrity. Because there are no wildlife or waterfowl refuges in the Project area, constructive use through ecological intrusion is not addressed. There are no eligible historic sites that would be affected by temporary construction easements. Therefore, no Section 4(f) use of sites would occur in this regard.

In those portions of the Project where sizable fill embankments would be constructed, it is possible that the weight of the fill material could cause subsidence (settling) of the areas immediately adjacent to the fill slopes. Evaluation of potential subsidence has indicated that no eligible historic structures would be affected by subsidence.

Description of Section 4(f) Properties

Based on the preceding information, eligible historic properties are not discussed in this evaluation unless land from these properties would be permanently incorporated into the 2002 Preferred Alignment. Specifically, according to 23 CFR 771.135(p)(5)(i), Section 4(f) constructive use does not occur at eligible historic properties unless "effects" or "adverse effects" to those properties as a result of proximity impacts (i.e., noise levels, substantial impairment of esthetic features, restricted access, vibration impacts, or ecological intrusion) have been identified. The Utah SHPO has concurred with UDOT's determination of no "effects" or "adverse effects" at historic sites as a result of proximity impacts.

Therefore, the following evaluation provides detailed information only for Deer Creek State Park and the two eligible properties where Section 4(f) use would occur: the historic HVHR Overpass (42WA114) and the historic Deer Creek Reservoir Dam Complex (DC6). Descriptions of the existing conditions at these sites are also provided below. Photos referenced are located at the end of this chapter.

Deer Creek State Park

Deer Creek State Park is a water-oriented recreation area of approximately 1,214 hectares (3,000 acres) surrounding Deer Creek Reservoir at the southern end of Heber Valley. Deer Creek Reservoir encompasses approximately 1,076 hectares (2,660 acres) of surface water at high water level.

Principal activities at the park include fishing, motor boating, water-skiing, and sailing. Other activities include overnight camping and day uses such as picnicking, wind-surfing, swimming, and sightseeing. According to survey data, the number of visits to Deer Creek State Park has varied considerably from year to year, from as high as 494,748 in 1980 to as low as 197,634 in 1993 (Bear West 1998). The majority of visitors to the park in August 1994 came from five counties: Utah (43 percent), Salt Lake (34 percent), Wasatch (11 percent), Summit (5 percent), and Davis (2 percent). An additional 5 percent came from other counties or states (UDNR 1994).

Deer Creek State Park property is owned by the U.S. Department of the Interior, Bureau of Reclamation (BOR) but the Park is administered and operated by the State of Utah Department of Natural Resources, Division of Parks and Recreation (State Parks) under a cooperative agreement with BOR. The reservoir was created as part of BOR's Provo River Project to provide for the diversion, storage, and beneficial uses of the Provo, Heber, and Duchesne Rivers (FHWA 1989a). An entrance to Deer Creek State Park is shown in Photo 5-1 at the end of this chapter. The Park borders the adjacent US-189 highway corridor along much of its eastern boundary (Figure 5-2).

A number of developed and undeveloped facilities are located within Deer Creek State Park including: the developed day use and campground near the park's main entrance, Wallsburg Bay, Rainbow Bay, Island Bay Beach Area, Charleston Bridge, and Scotts Hollow. Of these facilities, only the entrance to the developed day use area and campground in Deer Creek State Park is located within the current segment. As previously stated, no direct or constructive use of this park would occur.

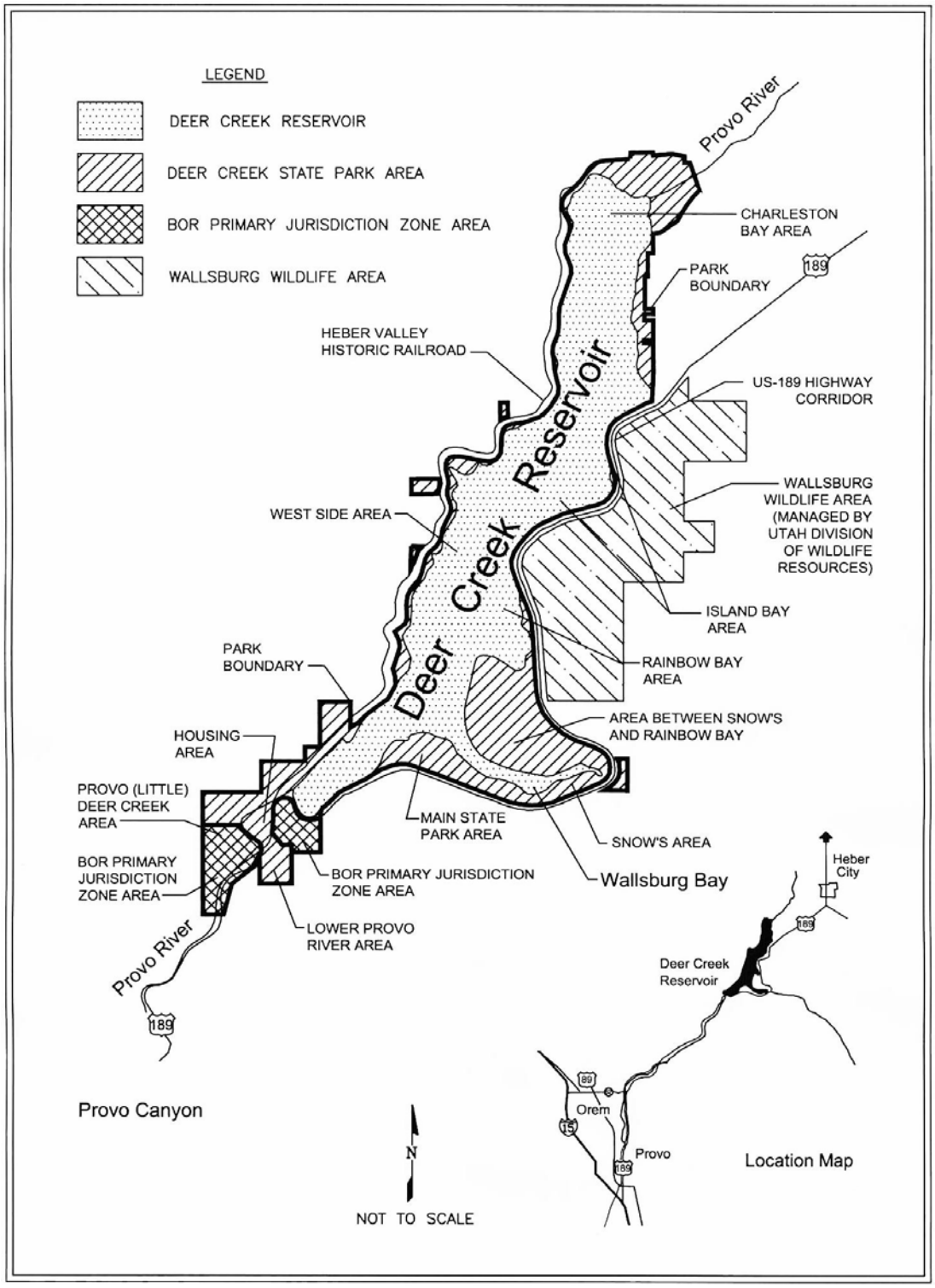

Figure 5-2. Deer Creek State Park Boundary and Management Area.

Deer Creek Reservoir Dam Complex

The Deer Creek Reservoir Dam Complex, including the dam and associated buildings (not the reservoir), is owned by BOR. The complex was and remains the key project in the larger Provo River Project, a complex water system built to deliver culinary water to Salt Lake City and irrigation water to hundreds of farms in the Utah and Salt Lake Valleys. The Deer Creek Reservoir was the first BOR-constructed reservoir built with the primary purpose of delivering culinary water to municipalities (Armstrong 1986). It still performs this function by delivering drinking water to Salt Lake City through the Salt Lake Aqueduct. Another important aspect of the construction project is that the Civilian Conservation Corps (CCC) provided labor and expertise to build the Deer Creek Government Camp (a staging area for dam construction), dismantling of houses within the proposed reservoir area, and rebuilding of the relocated highway and portions of the Rio Grande Western Railroad around the reservoir (Larson 1940).

In light of the project's association with the CCC and the project's achievements, the Deer Creek Reservoir Dam Complex is eligible for the NRHP under Criterion A. The complex retains integrity of location, design, setting, materials, workmanship, feeling, and association, and it represents an excellent example of a government dam construction project undertaken during the first half of the 20th century. The dam construction represents a good example of a rolled, earth-filled dam, it embodies the distinctive characteristics of 1930s dam construction, and, at the time of construction was one of the largest earth-filled dams in existence. As such, the dam complex is also eligible for the NRHP under Criterion C. Contributing elements to the eligibility of the site include the dam itself, gatehouse, storage buildings, chlorination building, and valve house/power plant building (Weymouth et al. 1995). This property is shown in Photo 5-2 at the end of this chapter.

Heber Valley Historical Railroad (HVHR) Overpass

The HVHR Overpass crosses U.S. Highway 189 just west of the Deer Creek Dam. The structure is comprised of two concrete piers, wood pile abutments, and wood pile approach supports. The main span is a steel I-beam construction, while the approaches are 0.6 by 3.7 meter (2 by 12 foot) stringers with a 1.2 by 3.7 meter (4 by 12 foot) open deck. The total length of the overpass is 50.3 meters (165 feet). The deck is covered with gravel around the railroad ties. Each of the concrete piers have a stacked pylon with decorative impressions on the pillars and columns. The rail plates and ties are stamped with a date of 1939. The overpass was a later addition to the railroad line as part of the relocation of tracks during the construction of Deer Creek Dam (BYUOPA 1988). The overpass is now over 50 years old, associated with the construction of Deer Creek Dam, and eligible for the NRHP under Criterion C, embodying distinctive characteristics of a method of construction (BYUOPA 1995). The railroad overpass is owned by UDOT, and is structurally deficient and substandard in vertical clearance. This property is shown in Photo 5-3 at the end of this chapter.

Section 6(f) of the 1965 Land and Water Conservation Fund Act

Section 6(f) of the 1965 Land and Water Conservation Fund Act provides funding for acquiring property and developing public recreational facilities and also protects the loss of that property to other uses. Section 6(f) of the Act states that:

> No property acquired or developed with assistance under this section shall, without the approval of the Secretary, be converted to other than public outdoor recreation uses. The Secretary shall approve such conversion only if he finds it to be in accord with the then existing comprehensive statewide outdoor recreation plan and only upon such conditions as he deems necessary to assure the substitution of other recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location.

If land acquired or improved with Federal grant money (Bureau of Outdoor Recreation Land and Water Conservation Funds) is to be impacted by a proposed project, a suitable exchange of lands must be coordinated with the U.S. Department of the Interior. State Parks is the official representative of the National Park Service with respect to Section 6(f) land. Coordination with this agency is cited in Chapter 6, Consultation and Coordination.

Within the Wildwood to Deer Creek State Park Segment, a small component of Deer Creek State Park, the Main State Park Area (Figure 5-2), has been identified as a Section 6(f) property because it was acquired or improved with Section 6(f) funds. The area is a 26 hectare (64 acre) public campground on the east bank of the reservoir about 2.3 kilometers (1.4 miles) east of Deer Creek Dam and is accessed directly from the existing highway. No direct or constructive use of this area would result from implementation of the 2002 Preferred Alignment (Bennett 1994) or the 1989 SEIS Alignment (FHWA 1989a). As such, it is not discussed further in this chapter.

Impacts to Section 4(f) Properties

Impacts of the 1989 SEIS Alignment and the 2002 Preferred Alignment are described below and summarized in Table 5-2.

Impacts to Deer Creek State Park

The boundary and 12 Management Areas of Deer Creek State Park are shown in Figure 5-2. The 1989 SEIS Alignment would impact 1.09 hectares (2.70 acres) of land adjacent to the existing highway in the Main State Park Area managed by Deer Creek State Park and would constitute a 4(f) impact if implemented, and the 2002 Preferred Alignment would not affect this area (Figure 5-3). The 2002 Preferred Alignment would impact approximately 19.18 hectares (47.40 acres) of land that is undeveloped and located below Deer Creek Dam or adjacent to the dam near the reservoir. As indicated on Figure 5-4 (see Figure 2-1 for an overview of this area), this land is entirely within an

Table 5-2. Potential Impacts to Section 4(f) Properties from the 1989 SEIS and 2002 Preferred Alternatives.

4(F) PROPERTY	1989 SEIS ALIGNMENT	2002 PREFERRED ALTERNATIVE
Deer Creek State Park	Use of a small portion of land outside the right-of-way near the park entrance that would constitute an impact.	No impacts.
Deer Creek Reservoir Dam Complex	No impacts.	Placement of large amounts of fill on the face of the dam. Would constitute an impact.
Heber Valley Historic Railroad (HVHR) Overpass	Significant modifications to the overpass. Would constitute an impact.	No impacts.

area classified as BOR Primary Jurisdiction Zone, according to the Deer Creek Reservoir Management Plan (Bear West 1998). The BOR Primary Jurisdiction Zone is managed to benefit water and power operations and restricts usage to those of official capacity. Since public recreational activities are not permitted, the BOR Primary Jurisdiction Zone is not considered part of the park. As the name suggests, the BOR Primary Jurisdiction Zone remains under the primary jurisdiction of BOR and is not managed as part of the Deer Creek State Park.

As shown on Figure 5-4, the 2002 Preferred Alignment borders the BOR Housing Area, which is also not included in Deer Creek State Park. Use of this land would not affect any future plans for the Housing Area or any of the developed park area (Henrie 1995), and would not constitute a 4(f) use. The Deer Creek State Park to Heber Segment would not impact any portion of the adjacent Park, and would not result in a 4(f) use.

Historic qualities of the Deer Creek Reservoir Dam Complex would be adversely affected by the 2002 Preferred Alignment since large volumes of fill would be placed upon the dam face (Figure 5-4). The 1989 SEIS Alignment would not impact the dam complex (Figure 5-5).

Impacts to Heber Valley Historical Railroad (HVHR) Overpass

The 1989 SEIS Alignment would cross the HVHR on a new structure immediately below the existing overpass (Figure 5-6). Construction of the new structure and its extensive retaining walls for the abutments would adversely impact the overpass because of their height and close proximity. The 2002 Preferred Alignment would not impact the overpass.

Avoidance Alternatives

Chapter 2, Alternatives, describes how the Value Engineering (VE) process, the 1995 Re-Evaluation and subsequent technical studies considered all possible feasible alternatives for the Project, finally settling on the 2002 Preferred Alignment selected from dozens of alignment variations as part of the re-evaluation process. Other alignments reviewed but dismissed are identified in the first SEIS

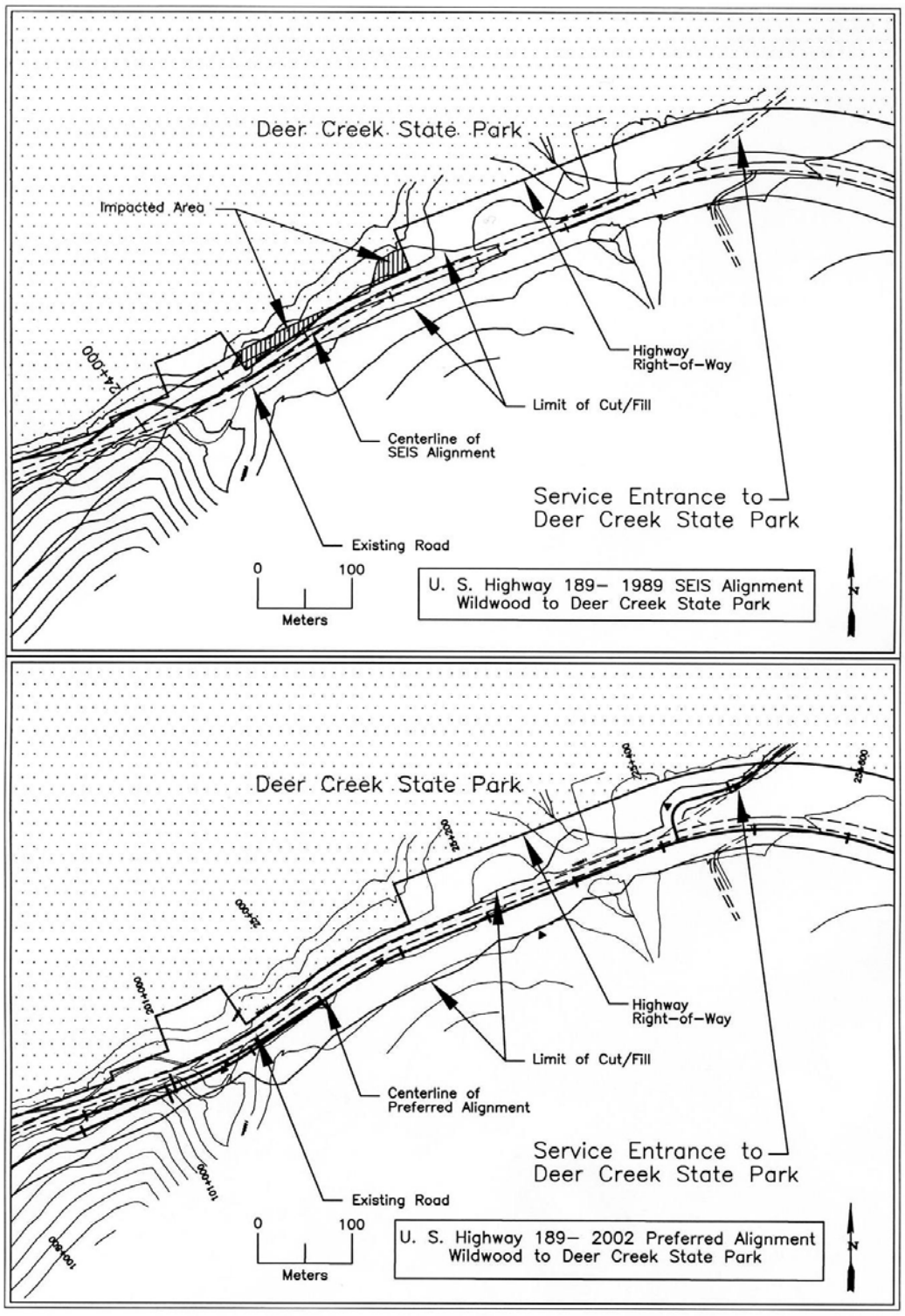

Figure 5-3. The 1989 SEIS and 2002 Preferred Alignments in the Vicinity of Deer Creek State Park.

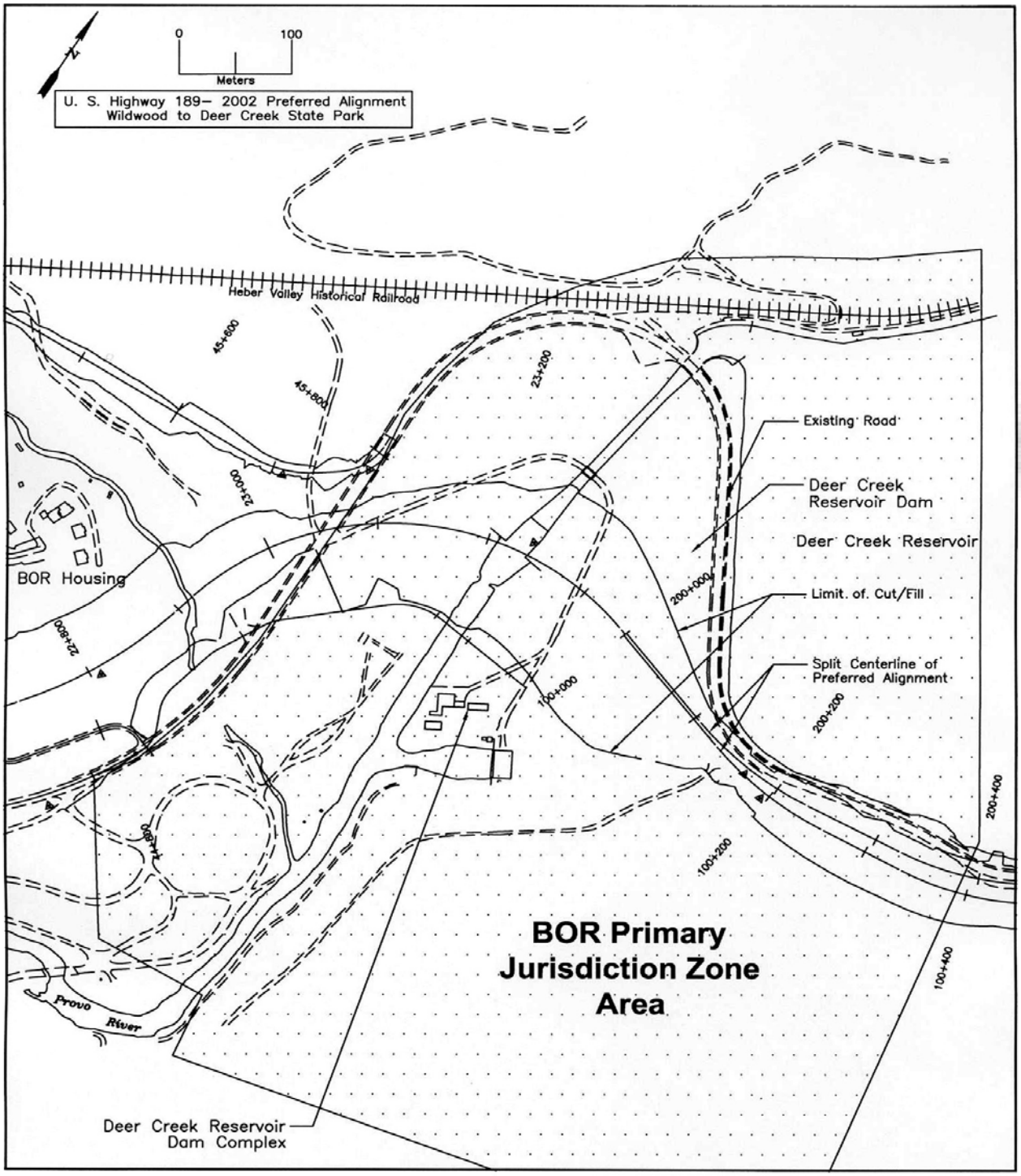

Figure 5-4. Impacts of the 2002 Preferred Alignment to Deer Creek Reservoir Dam Complex.

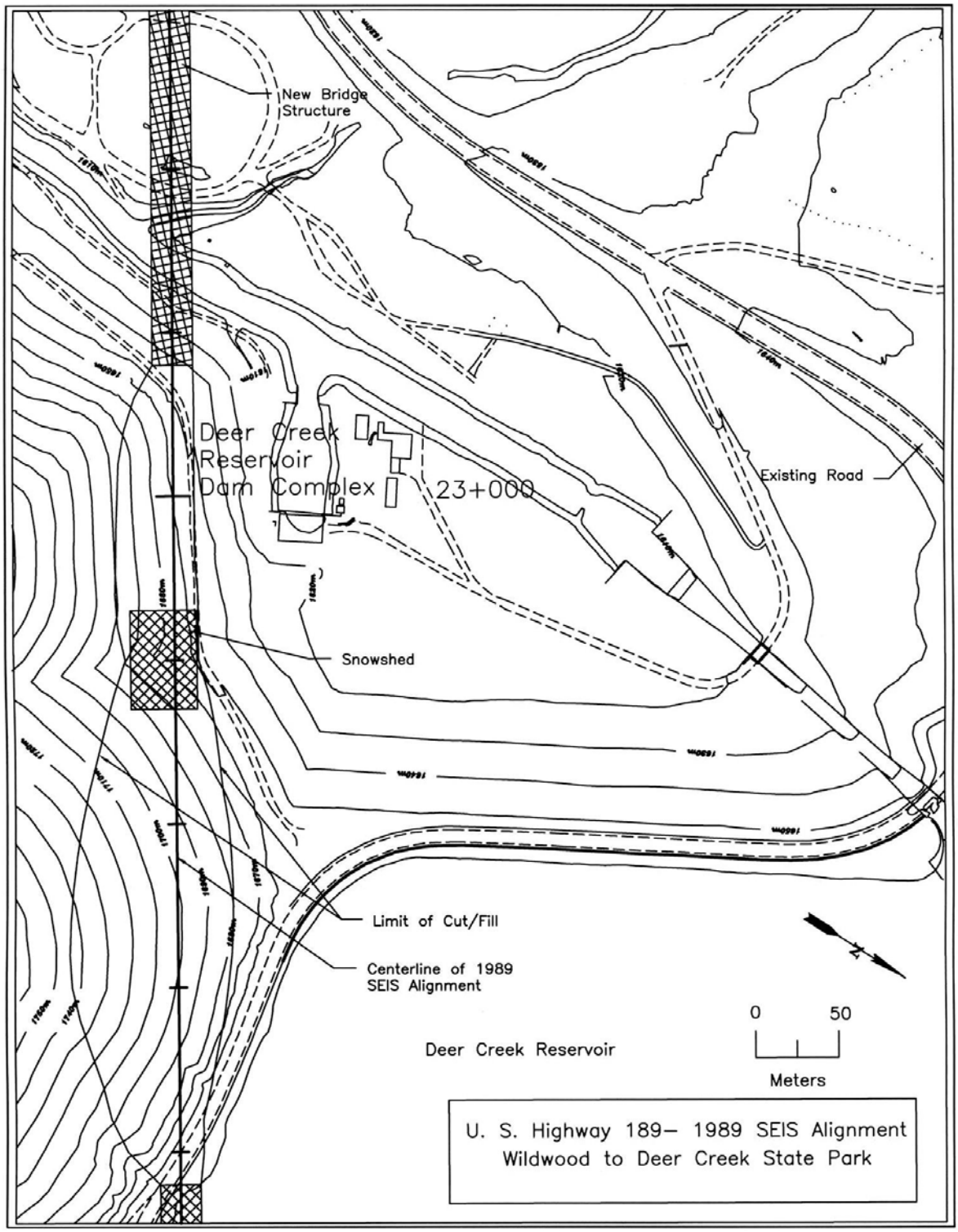

Figure 5-5. Impacts of the 1989 SEIS Alignment to the Deer Creek Reservoir Dam Complex.

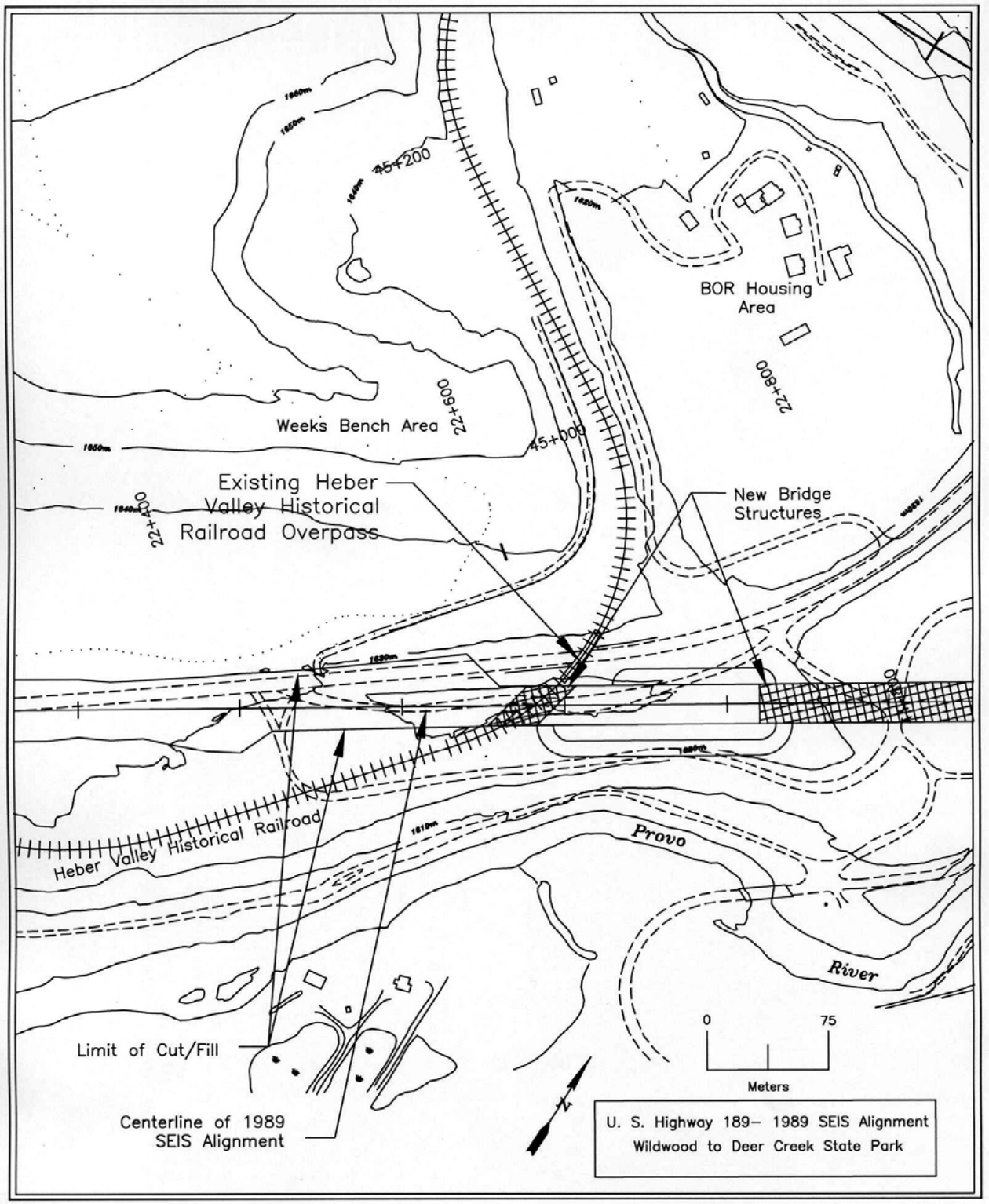

Figure 5-6. Impacts of the 1989 SEIS Alignment to the Heber Valley Historical Railroad (HVHR) Overpass.

Impacts to Deer Creek Reservoir Dam Complex

(FHWA 1989a) and in the Value Engineering Workbook (Appendix D). As presented in the Workbook, several different alignments were developed and evaluated for each of the four sections of the Project, with some sections allowing more alternatives than the others. For example, within the four sections of the Wildwood to Deer Creek Segment, Section 2 allowed seven alternatives and Section 3 allowed only three. The 2002 Preferred Alignment for the Wildwood to Deer Creek State Park Segment is a compilation of different section alignments that would have the least amount of environmental and social impacts while best meeting the Project purpose and need. These different section alignments, their potential 4(f) impacts, and the composition of the 2002 Preferred Alignment are shown in Table 5-3.

The 2002 Preferred Alignment avoids the potential for 4(f) impacts in all sections except Section 3, since the Deer Creek Dam Complex lies within this section. The following summarizes avoidance alternatives considered for this resource and for the HVHR Overpass, which is avoided by the 2002 Preferred Alignment.

Avoidances Considered for the Deer Creek Reservoir Dam Complex

Routing the highway alignment away from Deer Creek Dam would have substantial environmental, social, and economic impacts. These impacts would result primarily from the construction of extensive bridge structures as described below for the two alignments that avoid impacts to Deer Creek Dam: the 1989 SEIS Alignment and the Split Alignment (CEI 1994b).

For the 1989 SEIS Alignment, two bridges would have been constructed to avoid Deer Creek Dam: one downstream of the dam and one upstream of the dam (Figure 5-7). The bridge downstream of the dam would be approximately 300 meters (1,000 feet) in length and would be located above the Provo River and undeveloped fishing and camping areas. The bridge upstream of the dam would be approximately 150 meters (500 feet) in length and would be located above Deer Creek Reservoir. Both bridges would effectively eliminate recreational use of the areas upon which they are built and intrude significantly into the visual environment of recreationists who use these areas. The vertical profile of the downstream bridge places the roadway approximately 6 meters (20 feet) below the crest of the dam. This situation could potentially cause the roadway to become an alternate spillway for the reservoir. In addition, construction of these bridges would make the 1989 SEIS Alignment cost approximately $7 million more than the 2002 Preferred Alignment. Although the 1989 SEIS Alignment is feasible, it is not a prudent alternative for avoiding impacts to the Deer Creek Dam Complex.

The Split Alignment was designed to overcome the alternate spillway problem associated with the 1989 SEIS Alignment while avoiding impacts to Deer Creek Dam. This option would require a 680-meter (2,230-foot) bridge that would span the HVHR, the Provo River, and the first avalanche chute south for Deer Creek Dam (see mapping for Section 3 - Split Alignment Option in Appendix B). Although this bridge eliminated the problem of creating an alternative spillway for Deer Creek Dam, the problems associated with recreational and visual impacts described for the 1989 SEIS Alignment

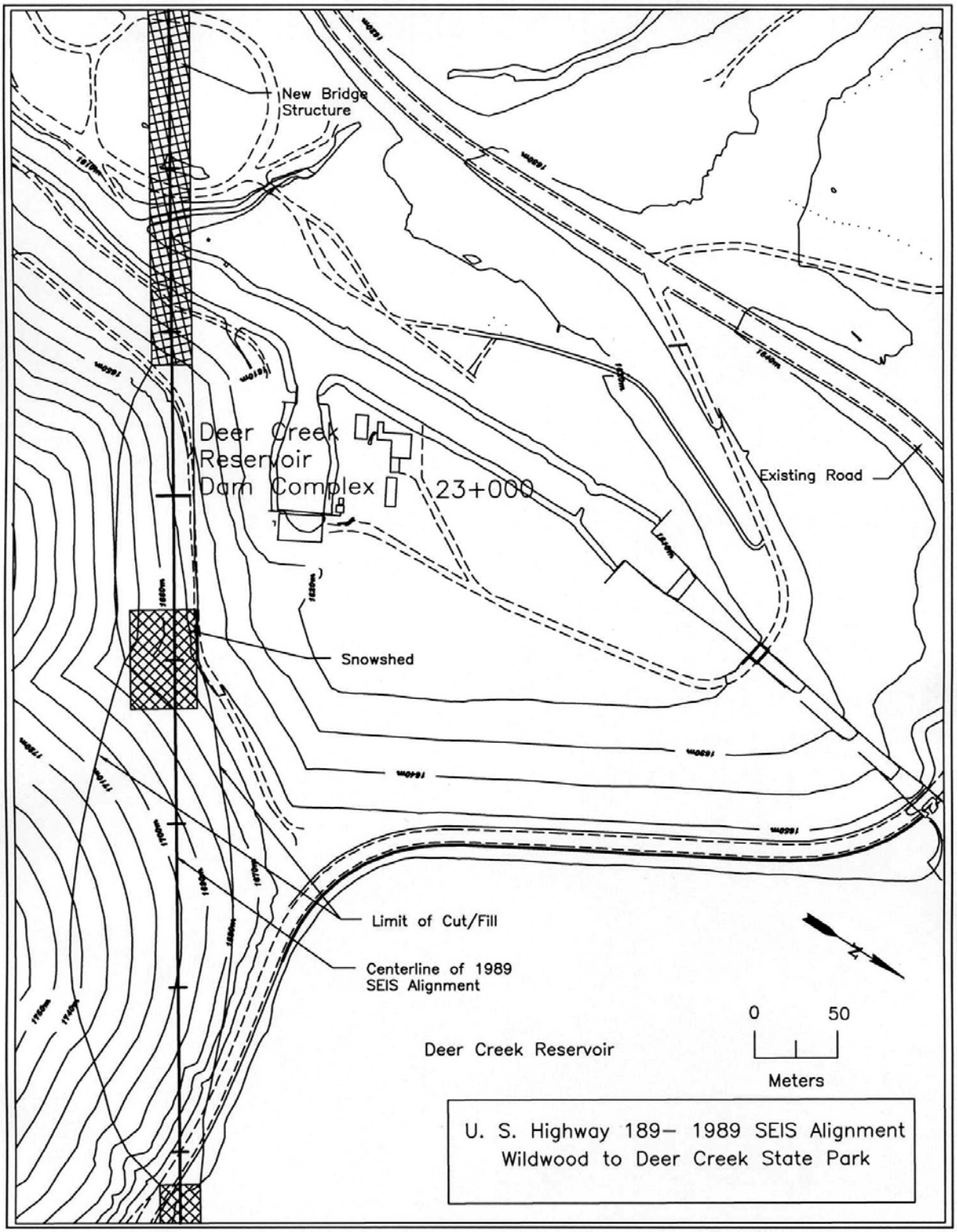

Figure 5-7. Avoidance of the Deer Creek Reservoir Dam Complex: SEIS Alignment.

Table 5-3. Section 4(f) Impacts from Various Alignments.

ALTERNATIVE	SECTION 4(F) IMPACT	IMPACT DESCRIPTION	SELECTED AS THE 2002 PREFERRED ALIGNMENT
Section 1			
1989 SEIS	No		
Adj. SEIS	No		X
Elevated	No		
Split	No		
Section 2			
1989 SEIS	Yes	Displacement of two eligible homes	
Lower	Yes	Displacement of two eligible homes	
Upper	No		X
Split Upper	No		
Tangent	Yes	Displacement of two eligible homes	
Cantilever	Yes	Displacement of two eligible homes	
Split Lower	Yes	Displacement of two eligible homes	
Section 3			
1989 SEIS	Yes	Adversely affect HVHR Overpass and Deer Creek State Park	
Buttress Fill	Yes	Adversely Affect Historical Features of Deer Creek Dam Complex	X
Split	Yes	Adversely affect HVHR Overpass	
Section 4			
1989 SEIS	No		X

actually increased in magnitude under the Split Alignment. In addition, the total cost of the bridge structure was estimated at approximately $16.9 million, approximately $13.7 million more than the 2002 Preferred Alignment. Although the Split Alignment is feasible, it is not a prudent alternative.

As detailed on page 5-9, the dam complex is eligible for the NRHP, primarily for its historical significance under both Criterion A and Criterion C. The 2002 Preferred Alignment would impact the complex by placing a large amount of fill material on a portion of the dam enhancement. No ancillary facilities would be impacted, but the appearance of the dam would be modified by placement of the fill and highway. Development of the 2002 Preferred Alignment across Deer Creek Dam would help buttress the dam from failure during a significant earthquake event, would be less costly than avoidance, and would not affect recreational access or the visual environment to the magnitude of the two avoidance alternatives. The BOR has expressed strong support for this

alignment because of its benefits to dam safety. Therefore, implementation of the 2002 Preferred Alignment would be more in the public interest than avoiding the Deer Creek Reservoir Dam Complex.

In sum, avoiding impacts to the Deer Creek Reservoir Dam Complex does not provide a feasible or prudent alternative to the construction of the 2002 Preferred Alignment across the dam face and the resulting adverse effect.

The BOR recently completed an environmental study of a proposal to provide earthquake reinforcement at the dam and determined that no significant impact would occur (BOR 2002). Resulting proposed work would be coordinated with highway construction but would occur regardless of any proposed highway construction.

Avoidances Considered for the Heber Valley Historical Railroad (HVHR) Overpass

Since the 1989 SEIS Alignment crosses the river and dam on a bridge, little leeway is possible to adjust it below the bridge. Routing the highway alignment away from the HVHR Overpass under the 1989 SEIS Alignment would have substantial economic and social impacts. Movement to the north would result in the relocation of a recently constructed Utah Power and Light substation 400 meters (1,300 feet) south of the overpass (Photo 5-4). This substation serves as a critical link to providing electrical service to area residents, commercial businesses, and recreational facilities. The disruptions and costs associated with moving this facility would be a significant economic impact. In addition, the movement would impact the BOR housing area, which is the only local housing for Deer Creek State Park personnel, and the loss of one or more of these homes would be a significant impact to those tenants and the State Park. The relocation of one or two homes in the BOR housing area would likely be required as a result of fill from a new alignment. Relocation of the substation and the homes in the BOR housing area would be cost prohibitive and unnecessary. Movement of the highway to the south would impact the HVHR tracks (which is also an eligible historic property) adjacent to the highway and potentially the Provo River.

The 2002 Preferred Alignment avoids the HVHR Overpass but would impact the historical features of the Deer Creek Dam Complex by placing large amounts of fill for roadway construction across the face of the dam. The SEIS and Split Alignments in Section 3 would impact the HVHR Overpass as noted above. But they would not impact the historical features of the Deer Creek Dam Complex as a result of the highway alignment being placed over the dam complex via two bridge structures.

However, the VE Study (Ventry 2000) determined that the SEIS and Split Alignments in this section were not prudent and feasible for the following reasons:

1. Cost - The Buttress Fill Alignment was considerably less costly because the SEIS bridge structure cost and provision of a place within the Project to dispose of waste (fill).

2. Geometrics/Safety - Anticipated snow, avalanche, and ice conditions on the SEIS bridge structures would be a safety hazard that the Buttress Fill Alignment would avoid.

3. Geotechnical/Maintenance - The BOR needed the buttress fill to stabilize the dam against potential liquefaction from seismic events. The Buttress Fill Alignment again provided an appropriate waste site within the Project.

4. Constructability - The 1989 SEIS Alignment was rated "0" because the finished road grade elevation being below the crest of the dam could affect the integrity of the dam and was deemed not constructable (Appendix B).

5. Traffic Control - Substantial traffic control problems were anticipated with the 1989 SEIS Alignment because of the necessity to use the current roadway grade to construct the structures, while the Buttress Fill Alignment would allow use of the existing road during the construction of the new alignment.

6. Public Comment - Public comment was greatly in favor of the Buttress Fill Alignment.

Based on engineering, environmental, geotechnical, and economic criteria, no other alignments that would have avoided identified Section 4(f) resources were identified. Since the 2002 Preferred Alignment and 1989 SEIS Alignment would both impact Section 4(f) sites, complete avoidance of eligible sites is not feasible. As a result, there is no feasible and prudent alternative to the use of Section 4(f) resources.

Measures to Minimize Harm

Measures to Minimize Harm to the Deer Creek Reservoir Dam Complex

The 2002 Preferred Alignment would require the placement of fill upon the dam structure. This alternative is supported by BOR to further stabilize the dam. Although all existing features of the dam itself would remain, portions of the embankment would be covered by fill, impacting the ability to view them in their historical context. None of the historic buildings or other facilities associated with the complex would be directly affected by the 2002 Preferred Alignment. In order to preserve the historic integrity of the dam complex, Historic American Engineering Record (HAER) documentation would be conducted. The level of HAER documentation and specific requirements have been defined through coordination with the SHPO, the ACHP, and BOR. As such, the 2002 Preferred Alignment will include measures to minimize harm to the Deer Creek Reservoir Dam Complex.

The BOR completed an environmental study of a proposal to provide earthquake reinforcement at the dam. Such proposed work would be coordinated with highway construction but would occur regardless of the proposed highway construction.

Memorandum of Agreement (MOA)

Consultation with the Utah SHPO to minimize Project effects has resulted in execution of a new MOA. The MOA (Appendix G) stipulates that HAER documentation will be conducted on the Deer

Creek Reservoir Dam Complex. The level of HAER documentation has been specified through consultation with the National Park Service's HAER coordinators and is included in the MOA. Further, consultation with the Utah SHPO has resulted in agreement that any archaeological sites that may be discovered during the undertaking would, if eligible, be significant for what could be learned through data recovery. The MOA includes stipulations concerning the identification, evaluation, and consultation regarding the eligibility, effect, and treatment of currently unidentified archaeological sites discovered during Project construction. All work undertaken pursuant to the MOA would be in accordance with the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* and the *Secretary of the Interior's Standards for Rehabilitation*.

Coordination

The designation of and minimization of harm to the impacted Section 4(f) properties has been coordinated with the following administering agencies:

- U.S. Department of the Interior, National Park Service;
- U.S. Department of the Interior, Bureau of Land Management;
- U.S. Department of the Interior, Bureau of Reclamation;
- U.S. Forest Service, Uinta National Forest;
- State of Utah Department of Natural Resources, Division of Parks and Recreation;
- Advisory Council on Historic Preservation;
- Utah State Historic Preservation Office;
- Utah Department of Transportation;
- Northwestern Band of Shoshone Nation;
- Fort Hall Business Council of Shoshone-Bannock Tribes;
- Confederated Tribes of Goshute Reservation;
- Uintah and Ouray Tribal Business Committee; and
- Skull Valley Band of Goshute Indians.

Minimization of harm to the planned Provo-Jordan River Parkway Trail (Trail) corridor has also been coordinated with State Parks.

The U.S. Department of the Interior (USDI), in a letter dated June 22, 1995 (Appendix G) requested continued coordination to complete the executed MOA and asked that further coordination with State Parks be made to address their concerns (Taylor 1995). A final response from USDI, dated February 14, 2003 (Appendix G), completed that coordination and concurred in Section 4(f) and 6 (f) approval of the Project. Coordination on the NRHP-eligible, historic Section 4(f) properties resulted in an MOA (Appendix G). Concerns expressed by State Parks in their letter dated November 21, 1994 (Green 1994), were responded to in a meeting held December 12, 1994 (Robertson 1994). This meeting resulted in an agreement that the 2002 Preferred Alignment would be designed in a manner that would not interfere with the construction of a future recreation trail, assuming the trail follows the trail alignment preferred by the Utah Department of Administrative

Services, Division of Risk Management, in its letter dated November 15, 1994 (Spiegel 1994) (coordination letters are provided in Appendix G).

TRAIL EXTENSION

Since the first SEIS was published in 1989, alignment changes have been proposed as part of the 2002 Preferred Alignment in the Wildwood to Deer Creek State Park Segment. In addition, some additional historic properties have become eligible for the NRHP, and an expansion of the Trail from Vivian Park to Deer Creek Dam (Trail Expansion) has been included in the analysis. This Section 4(f) and 6(f) evaluation is in regard to the Trail Expansion.

Appropriate information and background on the Proposed Action and 4(f) requirements have been provided earlier in this document.

Recreation Areas in the Trail Vicinity

There are no additional recreation areas in the Trail vicinity that have not been discussed in the highway 4(f) Section.

Historic Properties in the Trail Vicinity

Historic properties that are eligible for the NRHP are listed in Table 5-4.

4(f) Use of Properties

No direct or constructive use of 4(f) properties would occur during Trail implementation.

Properties Eligible for the National Register of Historic Places (NRHP)

42WA113: Fisherman's Bridge

This open, wood-tie deck, trestle railroad bridge spans the Provo River about a mile north of Wildwood. The bridge measures approximately 3 meters (10 feet) wide and 12.2 meters (40 feet) long, and has four wood tie pylons set into the riverbed. It was built in 1913 and replaced a Howe truss bridge that was initially constructed during the late 1800s. Sheet metal sections have been added to help preserve the structural integrity of certain horizontal members. As part of Segment 2 (from near Wildwood to the HVHR Overpass) is the only section in the Project Area still eligible for the NRHP. No direct or constructive use of the railroad would occur with Trail implementation.

DC6: Deer Creek Reservoir Dam Complex

This property was previously described in the 4(f) Section dealing with the highway. No direct or constructive use of the complex would occur with Trail implementation.

Table 5-4. Eligible Historic Properties in the General Vicinity and within the Area of Potential Effect (APE) of the Trail Extension.

SITE NUMBER AND NAME	WITHIN APE	SITE TYPE	ELIGIBLE FOR NRHP[a]	SECTION 4(f) USE APPLIES
42SU136: Henefer Bridge	No	Historic	No	No
42UT157: Vivian Park Campsite	No	Historic	Undetermined[b]	No
42WA88: Powder magazine	No	Historic	No	No
42WA86: Lithic scatter	No	Prehistoric	No	No
42WA113: Fisherman's Bridge	Yes	Historic	Yes	No
42WA112: Heber Valley Historical Railroad (HVHR)	Yes	Historic	Yes[c]	No
DC6: Deer Creek Reservoir Dam Complex	Yes	Historic	Yes	No
42WA177: Deer Creek Dam Government Construction Camp	No	Historic	No	No
DC4: Deer Creek Culvert	No	Historic	No	No
DC5: Provo River Timber Stringer Bridge	Yes	Historic	Yes	No

[a] National Register for Historic Places.
[b] The undetermined status of site 42UT157 is due to the fact that the site has been obliterated and is no longer able to be located. This site is the only site identified between Vivian Park and Wildwood.
[c] The eligible segment of the HVHR is located between roadway station 18+000 (Wildwood) and 22+500 (immediately down-canyon from the historic railroad overpass).

DC5: Provo River Stringer Bridge

This is a four-span timber stringer bridge located on the Provo River below Deer Creek Dam . It was built in 1938 as part of a highway bypass road diverting traffic around Deer Creek Dam construction activities. Though the bridge was built as a temporary measure, it still handles light local traffic. It was recommended Eligible to the NRHP (BYUOPA 2001). No direct or constructive use of the bridge would occur with Trail implementation since function of the bridge will not be impaired by improvements.

Impacts to 4(f) Properties

No 4(f) properties will be impacted by Trail implementation. Therefore, Section 4(f) does not apply to the Trail Extension portion of this Project.

Section 6(f) of the 1965 Land and Water Conservation Fund Act

In the Trail alignment vicinity, Vivian Park has been identified as a 6(f) property during coordination with the Utah Division of Parks and Recreation Grants Coordinator because it was acquired or improved with 6(f) funds. The park is currently the termination point of the existing Trail up Provo Canyon and is accessed directly from the highway. Because the Trail Extension from

Vivian Park to Deer Creek Dam constitutes a public outdoor recreation use and it would have no impact on the park, direct or constructive use of the park as a 6(f) resource would not occur. As such, it is not discussed further in this chapter.

DETERMINATION

Based on the above considerations, there is no feasible and prudent alternative to the use of land from the Deer Creek Reservoir Dam Complex, and the proposed action includes all possible planning to minimize harm to the Deer Creek Reservoir Dam Complex resulting from such use.

Photo 5-1. Deer Creek State Park.

Photo 5-2. The Deer Creek Reservoir Dam Complex.

Photo 5-3. Heber Valley Historical Railroad (HVHR) Overpass.

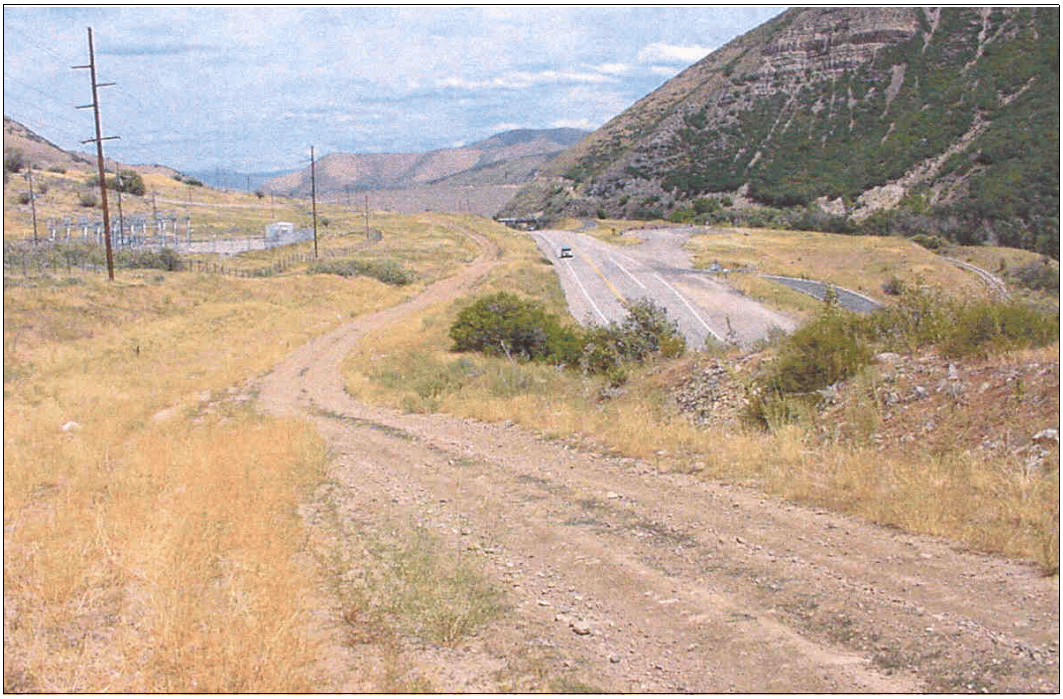

Photo 5-4. Haul Road and Existing Highway Looking North to Deer Creek Dam from near Power Substation.